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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------|------------------|
| 10/600,349 | 06/23/2003 | Tadao Shiotani | 239327US0 | 7102 |
| 22850 | 7590 | 07/12/2005 | EXAMINER | |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | LAWRENCE JR, FRANK M | |
| | | ART UNIT | PAPER NUMBER | |
| | | 1724 | | |

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/600,349 | SHIOTANI ET AL. |
| | Examiner | Art Unit |
| | Frank M. Lawrence | 1724 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 13 June 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 10 is/are allowed.
- 6) Claim(s) 1-9 and 11-23 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on June 24, 2002. It is noted, however, that applicant has not filed a certified copy of the Japanese application as required by 35 U.S.C. 119(b).

Specification

2. The disclosure is objected to because of the following informalities: Applicant noted in the response to the non-final action that a copy of the specification was submitted to remedy the problem of a poor scan or copy noted in the previous action, however no new copy was received. Applicant is requested to resubmit the specification.

Appropriate correction is required.

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The specification contains no basis for step 2 in claim 10 because it has been changed to recite "anaerobic conditions" for the nitrification step, or for step 1 in claim 10 because of the phrase "obligatory anaeration tank". It is believed that these are typographical errors and should be changed to "aerobic conditions" and "anaerobic tank," respectively. If not, Claims 10, 17 and their dependents would also be rejected under 35 USC 112, 1st paragraph for containing new matter.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1-3, 5, 6, 8, 9 and 11-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 is indefinite because the phrase "if this potential is used as an index" does not distinctly indicate whether a specific redox potential range is being claimed. Claims 2, 3, 5, 6, 8 and 9 are rejected for depending from a rejected parent claim.

6. Claim 17 recites "under obligatory anaerobic conditions in an obligatory anaeration tank," however it is unclear what "anaeration" refers to.

7. Claims 11-14, 19 and 20 each recite the multiple limitations to specific tanks that are not recited in parent claims 10 and 17. There is insufficient antecedent basis for these limitations in the claims. For example, claim 11 recites "the denitrification tank," however no tanks are recited in claim 10. The denitrification could be taking place in a conduit or microchannel reactor. Claims 15 and 16 are rejected for depending from a rejected parent claim.

8. Claim 17 recites the limitation "the aerated wastewater" in line 5. There is insufficient antecedent basis for this limitation in the claim. There are no aeration steps recited in the claim. Claims 18 and 21-23 are rejected for depending from a rejected parent claim.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Mulder (4,384,956)

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11. Mulder '956 teaches a wastewater purification system having an anaerobic methane fermentation tank (12) followed by an anaerobic dentirification tank (15) then an aerobic nitrification tank (20), with a return line (16) from the nitrification tank outlet back to the denitrification tank (figure 2, col. 4, line 40 to col. 3, line 7).

12. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoffland et al. (6,054,044).

13. Hoffland et al. '044 teach a wastewater treatment apparatus for biological treatment with bacteria, comprising an anoxic tank followed by an anaerobic tank then an aerobic tank, with a return line from the aerobic tank back to the anaerobic tank (figure 1, col. 7, line 1 to col. 8, line 29, claims 1-12). In another embodiment, the system can include an anoxic tank followed by an aerobic tank, a second anoxic tank, and a second aerobic tank (figure 7).

14. Claims 1, 2, 4, 5 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al. (6,007,712).

15. Tanaka et al. '712 teach a wastewater treatment apparatus, comprising an anaerobic filter apparatus (19), an anaerobic dentirification tank (11), and an aerobic nitrification tank (16) disposed in that order with a return line (21) from the nitrification tank back to the denitrification tank, wherein some of the tanks have bacteria immobilized on a PVA hydrogel support (figures, 3, 8, col. 7, line 14 to col. 9, line 13, col. 15, lines 22-59).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffland et al. '044 in view of Tanaka et al. '712.

18. Hoffland et al. '044 disclose all of the limitations of the claim as discussed in paragraph 11 above except that the bacteria have been immobilized on a support. Tanaka et al. '712 disclose a system as described in paragraph 13 above. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the tanks of Hoffland et al. '044 by using the support structures of Tanaka et al. '712 in order to provide a more compact apparatus with an increase of water content, an excellence of a permeability with respect to oxygen, and an increase in affinity with an organism ('712, col. 2, lines 43-52).

Allowable Subject Matter

19. Claim 17 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

20. Claims 11-16 and 18-23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

21. Claim 10 allowed. The allowability of claims 10 and 17 is under the assumption that the noted apparent typographical errors in each claim are also corrected.

22. The following is an examiner's statement of reasons for allowance: reasons for allowance of claim 10 are given in the previous office action, and are parallel to the reasons for allowance of claim 17.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

23. Applicant's arguments filed June 13, 2005 have been fully considered but they are not persuasive. Applicant argues that none of the Hoffland et al., Mulder, or Tanaka et al. patents disclose an apparatus for processing a wastewater that contains a nitrogen-containing dye, alone or in combination with the recited treatment tanks, or the specific anaerobic conditions recited in amended claim 1, however the apparatus claims do not positively recite any structural elements that would distinguish over the devices disclosed in the three prior patents. Each of the claimed tanks are defined as "for bringing wastewater" into contact with bacteria, however no bacteria or specific type of wastewater is recited as part of the system. Claim 1 is most broadly interpreted as a set of three tanks with no other limitations. If the claims were more narrowly interpreted, each one of the three cited patents still discloses a system containing specific bacteria containing tanks that are inherently capable of treating any wastewater containing nitrogen-based contamination. The method claims distinguish over the prior art by positively reciting treating wastewater containing a nitrogen-containing dye, and contacting with the specific types of bacteria. The objections to the abstract and drawings have been overcome and are withdrawn.

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Conclusion

24. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 571-272-1161. The examiner can normally be reached on Mon-Thurs 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frank M. Lawrence
Primary Examiner
Art Unit 1724

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7-11-05